



**CLARAGE**

**AIR HANDLING**  
**and**  
**AIR CONDITIONING**  
**EQUIPMENT**



**CLARAGE FAN COMPANY • MAIN OFFICE AND PLANTS, KALAMAZOO, MICH.**



for COOLING, HEATING OR COMPLETE AIR CONDITIONING IN STORES, RESTAURANTS, OFFICES, THEATRES, HOSPITALS, ETC.

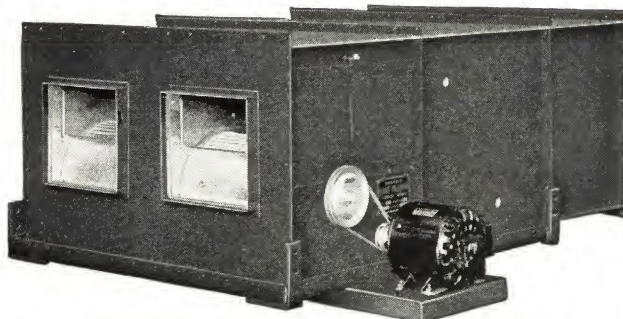
Multitherm Conditioning Units are built in nine sizes having capacities of 400 to 13600 CFM, and in both horizontal and vertical types.

Units are designed to provide all functions of year-round air conditioning, or they may be furnished for summer or winter conditioning only. They can be operated entirely with recirculated air, or an inlet section (equipped with either manually or automatically operated fresh and recirculated air dampers) can be furnished to utilize proportionate volumes of recirculated and outside air as desired.

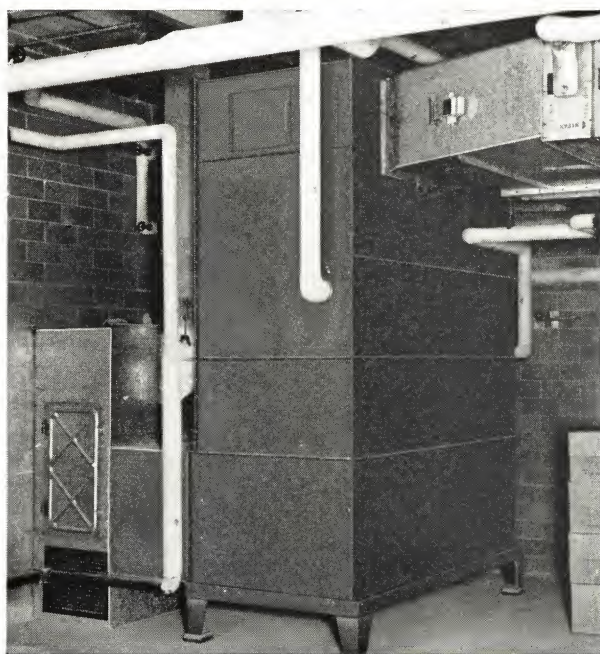
**Quiet Operation:** From the standpoint of silent performance, the units meet exacting requirements. Fan wheels are perfectly balanced. Fan bearings are graphite bronze-sleeve type. Lead noise isolators are used between bearings and bearing supports.

**Casing:** Cabinet, with exception of pan, is built in separately removable sections of either No. 18 or 16 gauge galvanized steel. Base of unit, serving also as drip pan, is of heavy welded steel construction, equipped with drain connections. Cabinets are furnished without insulation, fully insulated, or with only interior of pan insulated. Exterior of unit is enameled an attractive dark green.

**Fans** are multiblade type. Fan housings are No. 18 gauge steel. Fan wheels and shaft are cadmium plated and housings are galvanized when



**HORIZONTAL TYPE UNIT:** These units can be suspended from ceiling, mounted on platforms, or installed on the floor.



**VERTICAL TYPE UNIT** suitable for floor installation only. Both horizontal and vertical units can be used with or without duct work.

unit is furnished for cooling or humidifying service. Fan bearings are lubricated from one central oiler outside casing.

**Drive** is V-belt type with vari-pitch motor sheave furnished as standard equipment for motors 2 HP or less. Belt tightness adjustment furnished; drive guard optional.

**Discharge and Hand:** Horizontal units are either top horizontal (standard), bottom horizontal, or up blast discharge, and either right or left hand. Vertical units are either top horizontal or up blast discharge, and clockwise or counter-clockwise rotation.

**Filters** are dry throw-away, inexpensive type, easily replaceable. Filters can be located in horizontal or vertical position on vertical units.

**Cooling Coils** are copper tube with aluminum or copper fins of plate or helically wound type. Cold water coils are serpentine type. Direct expansion coils are suitable for Freon or methyl chloride operation. Supply connections can be located on either side.

**Heating Coils** are copper tube, finned type suitable for steam or hot water operation. Supply connections can be located on either side.

**Syncotherm Dampers** (patented) for providing a uniform heating effect can be furnished. They regulate volume of air passing through or by-passing heating coils—manual or automatic operation.

**Humidifiers** are spray (standard), grid or pan type.

**Automatic Control** for regulating temperature and humidity can be furnished in either electric or pneumatic type.

**Bypass Units:** Units can be equipped so as to embody inventions covered by patents of Auditorium Conditioning Corp. Such licensed units may incorporate an automatically operated bypass damper in fan section, Syncotherm dampers employed in conjunction with cooling coil, or step-control of several cooling coil circuits.

For more detailed information, see **Clarage Bulletin 107.**

## PHYSICAL DATA

Unit No.	CFM	Outlet Area (Total) Sq. Ft.	FANS		COIL FACE AREA Sq. Ft.		FILTERS				Motor HP Range
			No.	Size	Steam and Water Coils	Direct Exp. Coils	100% CFM		Over 100% CFM		
							No.	Size	No.	Size	
1205	400— 850	.53	1	$\frac{5}{8}$	1.25	1.5	1	20 x 25	1	20 x 25	$1_1-1_2$
1210	800— 1700	1.13	1	$\frac{7}{8}$	2.5	3.0	2	16 x 20	2	20 x 25	$1_4-1$
1215	1200— 2550	1.50	2	$\frac{3}{4}$	3.75	4.5	2	20 x 25	4	20 x 25	$1_1-1_1\frac{1}{2}$
1820	1600— 3400	2.26	2	$\frac{7}{8}$	5.0	6.0	2	20 x 25	4	20 x 25	$1_1-2$
1830	2400— 5100	2.57	2	1	7.5	9.0	3	20 x 25	6	20 x 25	$1_1-3$
1840	3200— 6800	4.08	2	1 $\frac{1}{4}$	10.0	12.0	4	20 x 25	8	20 x 25	$1_4-3$
2450	4000— 8500	4.93	2	1 $\frac{3}{8}$	12.5	15.0	8	16 x 20	12	20 x 25	$1_3-5$
3060	4800—10200	5.80	2	1 $\frac{1}{2}$	15.0	18.0	6	20 x 25	12	20 x 25	$1_2-5$
3680	6400—13600	7.97	2	1 $\frac{3}{4}$	20.0	24.0	8	20 x 25	16	20 x 25	$3_4-7\frac{1}{2}$

## CAPACITY DATA

UNIT No.	CFM (Basic* 100%)	DIRECT EXPANSION COOLING (Total Heat in 1000 Btu/hr.) Entering Air at 83°F. D.B. 70°F. W.B.			COLD WATER COOLING (Sensible Heat in 1000 Btu/hr.) Entering Air at 83°F. D.B. 70°F. W.B.				HEATING (Btu in 1000 Btu/hr.) Entering Air at 60°F.			
		F-12 @ 45°F.			Cold Water @ 50°F.				Steam at 2 lbs.		Hot Water @ 180°F.	
		4 Row	5 Row	6 Row	GPM	4 Row	6 Row	8 Row	1 Row	2 Row	GPM	4 Row
1205	500	20.0	22.6	24.9	10	12.1	14.3	15.3	24.9	40.4	5	30.7
1210	1000	39.9	45.1	49.8	10	24.3	28.5	30.7	49.7	80.7	10	88.3
1215	1500	59.9	67.7	74.8	15	37.1	43.8	47.6	74.5	120.0	10	127.3
1820	2000	79.8	90.3	99.7	20	50.6	60.0	65.4	99.4	161.4	15	175.2
1830	3000	119.7	135.4	149.5	20	71.0	84.8	93.4	149.1	242.1	15	245.5
1840	4000	159.6	180.5	199.4	25	96.0	114.2	125.1	198.8	322.8	15	324.0
2450	5000	199.5	225.6	249.2	30	125.4	149.8	165.0	248.5	403.5	20	417.6
3060	6000	239.4	270.8	299.1	35	149.3	172.3	191.9	298.2	484.2	25	505.2
3680	8000	319.2	361.0	398.8	40	179.9	211.5	234.1	397.6	645.6	30	618.6

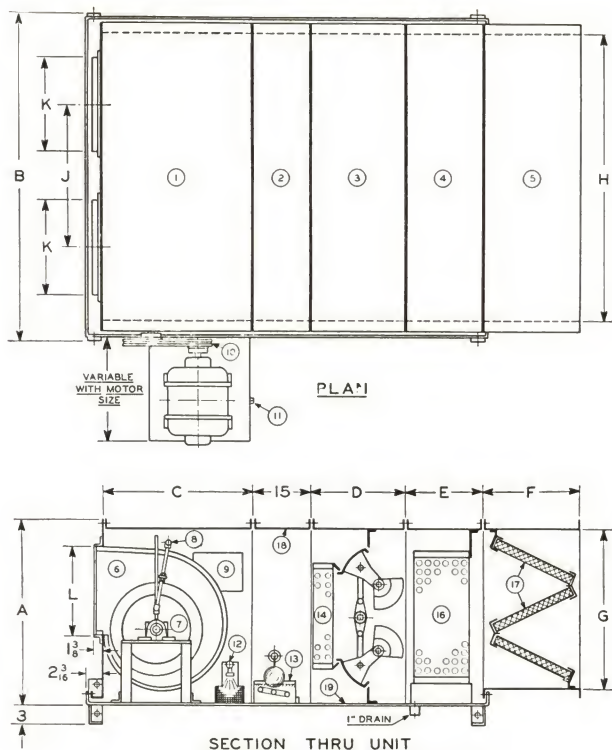
\*Basic CFM employs a 400 ft. per minute velocity through steam and water coils.



# MULTITHERM CONDITIONING UNITS

## HORIZONTAL TYPE

Top Horizontal Discharge

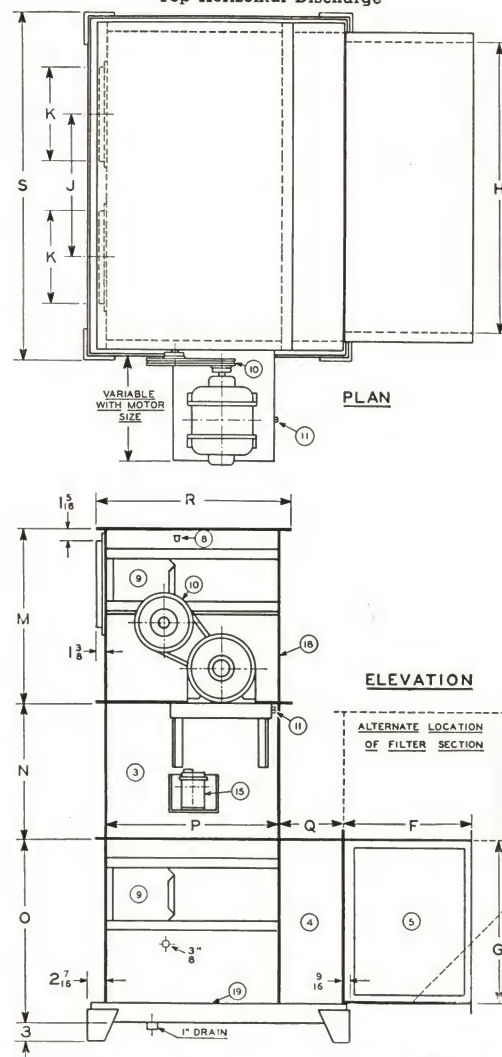


### LEGEND

- 1—Fan and Spray Type Humidifier Section.
- 2—Pan Type Humidifier or Inspection Section.
- 3—Heating Section with Syncrotherm Dampers.
- 4—Cooling Section. 5—Filter Section.
- 6—Multiblade Fans.
- 7—Sleeve Bearings with Noise Isolators.
- 8—Oiler and Oil Piping. 9—Inspection Door.
- 10—V-Belt Drive. 11—V-Belt Drive Tightening Bolt.
- 12—Spray Humidifier. 13—Pan Type Humidifier.
- 14—Heating Coil. 15—Syncrotherm Damper Operator.
- 16—Cooling Coil. 17—Filter Packs (removable).
- 18—Galvanized Casing (painted).
- 19—Welded Black Iron Pan (painted).

## VERTICAL TYPE

Top Horizontal Discharge



### DIMENSIONS

DIMENSIONS															
Unit No.	No. of Outlets	A	B	C	D		E		F		G	H	J	K Outside	
					With-out Damper	With Damper	6 Rows or Less	Over 6 Rows	100% or Under	Over 100%					
1205	1	23 <sup>9</sup> / <sub>16</sub>	30 <sup>1</sup> / <sub>4</sub>	18 <sup>1</sup> / <sub>16</sub>	9	16	18	27	6	6	20	25	—	9 <sup>1</sup> / <sub>2</sub>	
1210	1	25 <sup>9</sup> / <sub>16</sub>	40 <sup>1</sup> / <sub>4</sub>	23 <sup>1</sup> / <sub>16</sub>	9	16	18	27	6	24	22	35	—	14 <sup>3</sup> / <sub>8</sub>	
1215	2	25 <sup>9</sup> / <sub>16</sub>	57 <sup>1</sup> / <sub>4</sub>	23 <sup>1</sup> / <sub>16</sub>	9	16	18	27	6	24	22	52	26	11 <sup>1</sup> / <sub>4</sub>	
1820	2	28 <sup>13</sup> / <sub>16</sub>	50 <sup>1</sup> / <sub>4</sub>	23 <sup>1</sup> / <sub>16</sub>	9	20	18	27	6	28	25	45	22 <sup>1</sup> / <sub>2</sub>	14 <sup>3</sup> / <sub>8</sub>	
1830	2	28 <sup>13</sup> / <sub>16</sub>	70 <sup>1</sup> / <sub>4</sub>	27 <sup>1</sup> / <sub>16</sub>	9	20	18	27	6	28	25	65	32 <sup>1</sup> / <sub>2</sub>	14 <sup>3</sup> / <sub>8</sub>	
1840	2	34 <sup>13</sup> / <sub>16</sub>	90 <sup>1</sup> / <sub>4</sub>	33 <sup>1</sup> / <sub>16</sub>	9	20	18	27	6	28	30	85	42 <sup>1</sup> / <sub>2</sub>	18 <sup>1</sup> / <sub>8</sub>	
2450	2	39 <sup>13</sup> / <sub>16</sub>	85 <sup>1</sup> / <sub>4</sub>	33 <sup>1</sup> / <sub>16</sub>	13	20	18	27	6	28	35	80	40	20 <sup>1</sup> / <sub>8</sub>	
3060	2	44 <sup>13</sup> / <sub>16</sub>	95 <sup>1</sup> / <sub>4</sub>	39 <sup>1</sup> / <sub>16</sub>	13	23	18	27	6	30	40	90	45	21 <sup>5</sup> / <sub>8</sub>	
3680	2	58 <sup>13</sup> / <sub>16</sub>	90 <sup>1</sup> / <sub>4</sub>	45 <sup>1</sup> / <sub>16</sub>	13	26	18	27	6	30	54	85	42 <sup>1</sup> / <sub>2</sub>	24 <sup>7</sup> / <sub>8</sub>	
Unit No.	L Outside	M	N	O	P	Q				R	S	Shaft Extension			
						Water Coils						D.E. Coils	Dia.	Keyway	
						4 Rows or Less	5 or 6 Rows	7,8,9,10 Rows	6 Rows or Less					Width	Depth
1205	9 <sup>1</sup> / <sub>8</sub>	21 <sup>1</sup> / <sub>2</sub>	18	23 <sup>5</sup> / <sub>16</sub>	22	6	6	12	6	24 <sup>1</sup> / <sub>2</sub>	32 <sup>3</sup> / <sub>8</sub>	1	1 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>8</sub>	
1210	12 <sup>1</sup> / <sub>2</sub>	23	18	25 <sup>5</sup> / <sub>16</sub>	24	6	6	12	6	26 <sup>1</sup> / <sub>2</sub>	42 <sup>3</sup> / <sub>8</sub>	1	1 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>8</sub>	
1215	10 <sup>7</sup> / <sub>8</sub>	23	18	25 <sup>5</sup> / <sub>16</sub>	24	6	6	12	6	26 <sup>1</sup> / <sub>2</sub>	59 <sup>3</sup> / <sub>8</sub>	1	1 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>8</sub>	
1820	12 <sup>1</sup> / <sub>2</sub>	23	20	28 <sup>5</sup> / <sub>16</sub>	27	6	6	12	6	30	52 <sup>7</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>8</sub>	
1830	14 <sup>1</sup> / <sub>8</sub>	26	20	28 <sup>5</sup> / <sub>16</sub>	27	6	6	12	6	30	72 <sup>7</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>8</sub>	
1840	17 <sup>1</sup> / <sub>2</sub>	31 <sup>3</sup> / <sub>4</sub>	20	33 <sup>5</sup> / <sub>16</sub>	33	0	6	12	6	36	92 <sup>7</sup> / <sub>8</sub>	1 <sup>7</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>16</sub>	
2450	19 <sup>1</sup> / <sub>8</sub>	33 <sup>3</sup> / <sub>4</sub>	21	38 <sup>5</sup> / <sub>16</sub>	38	0	6	12	6	41	88 <sup>7</sup> / <sub>8</sub>	1 <sup>7</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>16</sub>	
3060	20 <sup>3</sup> / <sub>4</sub>	36 <sup>3</sup> / <sub>4</sub>	22	43 <sup>5</sup> / <sub>16</sub>	43	0	6	12	6	46	98 <sup>7</sup> / <sub>8</sub>	1 <sup>7</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>16</sub>	
3680	24 <sup>1</sup> / <sub>4</sub>	43	26	57 <sup>5</sup> / <sub>16</sub>	57	0	6	12	6	60	93 <sup>7</sup> / <sub>8</sub>	1 <sup>11</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>16</sub>	

CLARAGE FAN



## for CENTRAL STATION AIR CONDITIONING

Clarage Unicoil Units are offered in four different types as illustrated, and are widely used for both public building and industrial conditioning applications requiring surface type cooling equipment. They consist of an encased bank of cooling coils, eliminators and drip pan (with or without spray systems), bypass with dampers, or pre-heating coils, all made as a complete unit.

Unicoil units are built in a series of ten height sizes ranging between 2'-6" (above tank) and 2'-11½" overall height to 9'-9" (above tank) and 12'-10½" overall height, and in a series of widths ranging from 6'-0" to 10'-0" by 6" and 12" increments. Units are furnished in lengths of 4'-0", 4'-6", or 5'-0", depending upon type and number of rows of coils that are to be incorporated. Capacities range from 5000 to 50000 CFM.

Cooling coils are copper tube with aluminum or copper fins either of the plate or helically wound type, and are suitable for direct expansion, cold water, chilled water, or brine operation.

**Spray Systems** incorporate the highly efficient Clarage spray nozzles made of a special bronze alloy, highly resistant to abrasive action of spray water.

**Eliminators** provide parallel air flow at point of entry and exit, and are formed with beaded edges and special hooks to remove all entrained moisture from the air.

**Face and Bypass Louvre Dampers**, which may be furnished as optional equipment (Types AA and BA), are suitable for either manual or automatic operation.

**Unicoil Units** are regularly furnished constructed of galvanized copper bearing steel in the following gauges:

Casing .....	No. 20 gauge
Tank—(Standard) .....	No. 14 gauge
(Optional) .....	3/16" Welded B.A. Steel
Eliminators .....	No. 24 gauge

Where required, tanks, casings and eliminators may be supplied of such metals as Armco ingot iron, Monel metal, stainless steel, (18-8), aluminum or copper. Welded tanks of 3/16" or ¼" steel plate are frequently used.

For complete capacity data and specifications, see Clarage Data Sheets AW-31 to 36 inclusive.



Type A Unicoil Conditioning Unit.

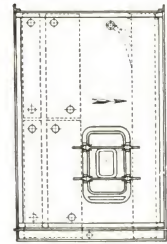
## AVAILABLE IN FOUR TYPES

### TYPE A

**Application:** For general cooling and dehumidifying, using surface type cooling equipment.

**Standard Equipment:** Galvanized copper bearing steel pan, casing and eliminators, cast iron access door, and cooling coils.

**Optional Equipment:** Preheating coils and humidifying spray system.



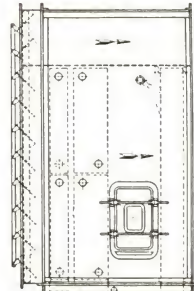
TYPE A

### TYPE AA

**Application:** Same as Type A but with provision for by-passing cooling coils.

**Standard Equipment:** Galvanized copper bearing steel pan, eliminators and casing with built-in by-pass, cast iron access door, and cooling coils. Unit license under Auditorium Conditioning Corp. patents where capacities are 15,000 CFM or less.

**Optional Equipment:** Preheating coils, humidifying spray system, and face and by-pass louvre dampers.



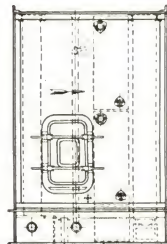
TYPE AA

### TYPE B

**Application:** For general cooling and dehumidifying, using surface type cooling equipment and requiring spraying of coils to wash air and to provide winter humidifying.

**Standard Equipment:** Galvanized copper bearing steel tank, eliminators and casing with cast iron access door, coil spray system with pressure gauge, ball cock and float valve, suction screen and cover, and cooling coils.

**Optional Equipment:** Vertical inlet eliminators (6"), or horizontal inlet louvres.



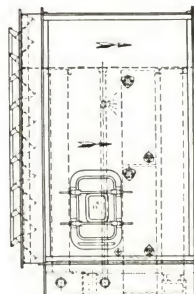
TYPE B

### TYPE BA

**Application:** Same as Type B but with provision for by-passing cooling coils.

**Standard Equipment:** Galvanized copper bearing steel tank, eliminators and casing with built-in by-pass, cast iron access door, coil spray system with pressure gauge, ball cock and float valve, suction screen and cover, and cooling coils. Unit license under Auditorium Conditioning Corp. patents where capacities are 15,000 CFM or less.

**Optional Equipment:** Vertical inlet eliminators (6"), horizontal inlet louvres, and face and by-pass louvre dampers.



TYPE BA

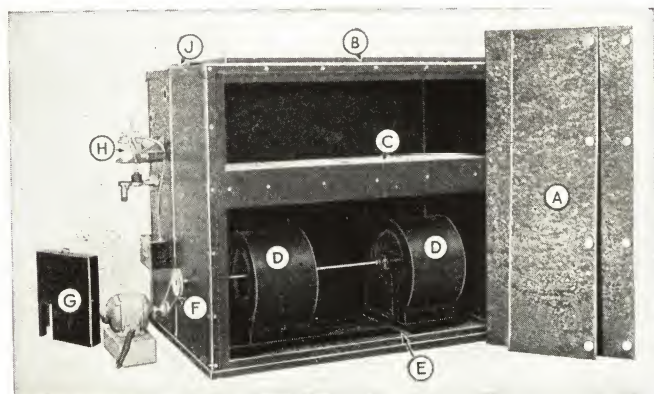
## DUOTHERM CONDITIONING UNITS

Duotherm Units are designed primarily for installation in fine homes, smart shops and offices. They furnish complete year-round air conditioning, and are built for floor installation only, usually located in the basement. This equipment is in reality a small complete central station system used with intake and discharge ducts. **Extreme quietness of operation** is an outstanding feature. Fan and motor are practically noiseless—sound-proof mountings are used.

Complete unit consists of two main assemblies; front assembly which contains filters and fans; back assembly which contains heating and cooling coils, and winter humidifier.

As shown by the illustration, fresh and return air to be conditioned enters through inlet B under fan suction, passing through the filters where it is thoroughly cleaned and purified. Air is then discharged by the fans into back assembly. Here it is circulated through and around cooling and heating coils, and discharged as properly conditioned air. Supply duct system then conveys conditioned air to space or individual rooms serviced by unit. Units are attractively finished with a high-grade, durable enamel.

For detailed information, see Clarage Bulletin 120.

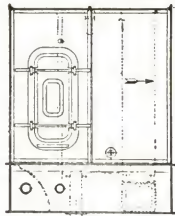


Open View of Duotherm Unit. A. Removable Access Panels. B. Return Air Inlet. C. Filters. D. Centrifugal Fans. E. Noise-Proof Insulation. F. V-Belt Drive. G. Removable Guard for Drive. (Winter Humidifier and Cooling and Heating Coils are in back section of unit and not shown.)



## AVAILABLE IN SIX TYPES

### TYPE H

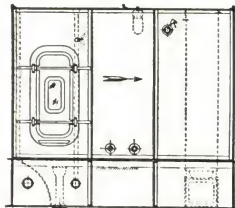


Length, 4'-11"

**Application:** For general washing, purifying, and humidifying service requiring equipment of the least expensive type.

**Standard Equipment:** Galvanized copper bearing steel tank, casing and eliminators, cast iron access door, horizontal inlet louvres, ball cock and float valve, main spray system with pressure gauge, marine light, and suction screen and cover.

### TYPE V

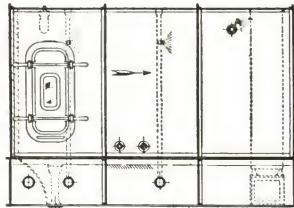


Length, 6'-11"

**Application:** For general washing, purifying, and humidifying service requiring equipment of the most efficient type.

**Standard Equipment:** Galvanized copper bearing steel tank, casing and eliminators, cast iron access door, horizontal inlet louvres, ball cock and float valve, main and flooding spray systems with pressure gauges, marine light, and suction screen and cover.

### TYPE CWW



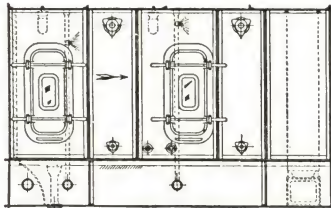
Length, 8'-10"

**Application:** For heavy duty humidifying, cooling and dehumidifying where cold or refrigerated water is employed, or for condenser water cooling.

**Standard Equipment:** Galvanized copper bearing steel tank, casing and eliminators, cast iron access door, horizontal inlet louvres, ball cock and float valve, two main and

one flooding spray systems with pressure gauges, marine light, and suction screen and cover.

### TYPE CF

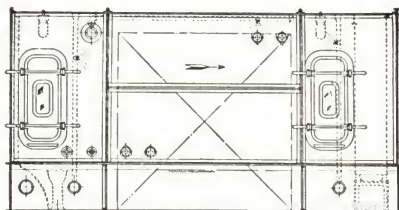


Length, 10'-0"

**Application:** For cooling and dehumidifying where fin type direct expansion coils employing Freon or other refrigerant are to be installed in spray chamber.

**Standard Equipment:** Galvanized copper bearing steel tank, eliminators and casing with coil stuffing boxes, two cast iron access

doors, horizontal inlet louvres, ball cock and float valve, two main spray systems with pressure gauges, two marine lights, and suction screen and cover.

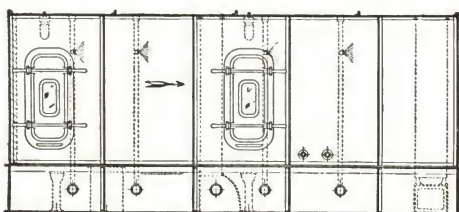


Length, 12'-0"

**Application:** For cooling and dehumidifying where prime surface cooling coils employing CO<sub>2</sub>, brine or other refrigerant are to be installed in spray chamber.

**Standard Equipment:** Galvanized copper bearing steel tank, eliminators and casing with removable coil panels and stuffing boxes, two cast iron access doors, horizontal inlet louvres, ball cock and float valve, one overhead and two main spray systems with pressure gauges, two marine lights, and suction screen and cover.

### TYPE CWW, TWO STAGE



Length, 14'-0"

**Application:** For either cooling and dehumidifying where cold city or well water is to be used, industrial dust removal or material reclamation, or water cooling.

**Standard Equipment:** Galvanized copper bearing steel tank, casing and main and intermediate eliminators, two cast iron access doors, ball cock and float valve, four main spray systems with pressure gauges, two marine lights, and suction screen and cover.

## for CENTRAL STATION AIR CONDITIONING

Clarage air washers are offered in six different types as illustrated, and are widely used for both public building and industrial air conditioning. They are built in a series of thirteen height sizes ranging between 2'-8" (above tank) and 4'-3 1/2" overall height to 19'-4" (above tank) and 21'-6" overall height, and in a series of widths ranging from 1'-6" to 22'-0" by 6" and 12" increments.

Capacities are based upon a 500 ft. per minute velocity through inlet area, and range from 2000 to 193,300 CFM.

Frictional resistance varies between 1/4 and 3/8" water gauge, dependent upon the type and length.

**Spray Systems** incorporate the highly efficient Clarage centrifugal type spray nozzles made of special bronze alloy, highly resistant to abrasive action of spray water.

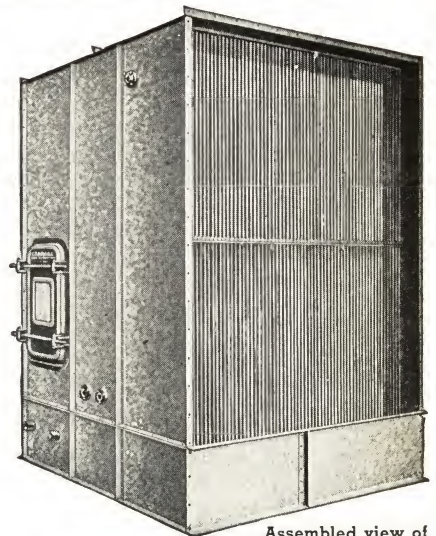
**Eliminators** provide a gradual increase in deflection of the air from front to rear of plate and parallel flow at point of entry and exit. Plates are formed with beaded edges and special hooks to remove all entrained moisture from the air, and are supported below water level on cast iron members.

**Washers** are regularly furnished constructed of galvanized copper bearing steel in following gauges:

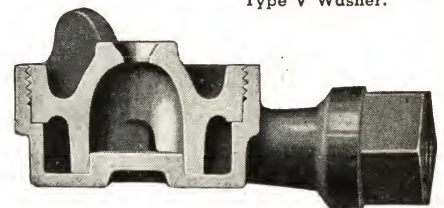
	All types except H	Type H
Casing .....	No. 18	No. 20
Tank—Bottom .....	No. 14	No. 16
Sides and Ends .....	No. 12	No. 14
Eliminators .....	No. 22	No. 24

Where required tanks and casings may be supplied of such metals as Armco ingot iron, Monel metal, stainless steel (18-8), aluminum and copper, while eliminators can be furnished in same metals or of lead if desired. Welded tanks of 3/16" or 1/4" steel plate are frequently used. Where tanks and housings are to be of concrete, parts can be supplied in accordance with exact requirements.

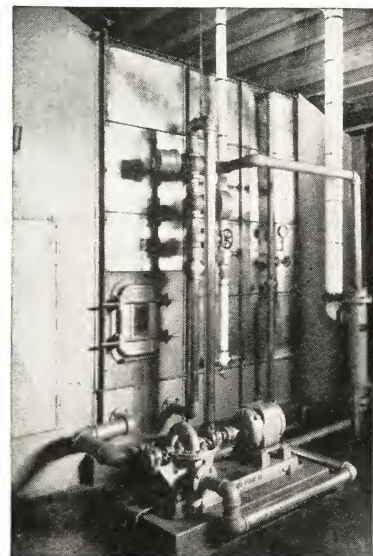
For complete capacity data and specifications, see Clarage Bulletin 109 and Data Sheets AW-1 to 22 inclusive.



Assembled view of Type V Washer.



Cross section of spray nozzle, showing spray chamber and volute openings.



One of 10 Clarage washers installed in large public building.



## TYPE HV—SLOW SPEED

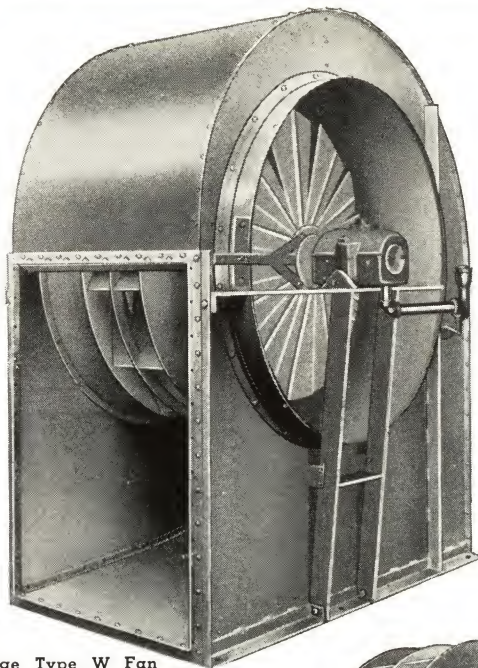
These fans are built in 28 sizes with capacities of 200 to 100,000 CFM, and in drive arrangements to meet any ventilating or air conditioning requirement. Because of slow speeds, perfectly balanced wheels and babbitted type bearings, HV Fans are **silent in operation**. Sizes No. 3 and smaller have cast iron side plate construction explained below. Larger fans are built completely of heavy gauge steel rigidly braced by angles (general appearance as shown at right).

**Fan Wheel** is multiblade type consisting of a large number of shallow steel blades riveted to steel rims. Blades are curved and tipped forward in direction of rotation. The wheel spider consists of steel T-arms cast in a heavy cast iron hub. All wheels are both statically and dynamically balanced.

**Bearings** are babbitted-sleeve type, self-aligning in all planes. Felt washers, one located at each end of outer bearing case, seal the oil in, and keep dirt out. Ball bearings can be furnished where required.

**Double Width Fans** (equipped with two wheels) are available in 21 sizes.

For more detailed information, see Clarage Bulletin 110.



Large Type W Fan equipped with Vortex Control.

## TYPE W—HIGH SPEED

High operating speeds, full self-limiting horsepower characteristic, and high efficiency over wide performance range are features of Type W Fans. As a result, often smaller motors can be used, and power costs are lower. Since the fans do not overload, no excess motor capacity is needed. Furthermore, despite high speeds, the fans offer **quiet performance**, making them suitable for all classes of ventilating and conditioning work. There are 27 sizes with capacities of 1000 to 100,000 CFM. Sizes No. 3 and smaller have cast iron side plate construction. Larger fans are built as shown at left.

**Fan Wheel** is of the backwardly inclined blade type with the steel blades welded or riveted to steel rims. On larger wheels, for maximum rigidity, intermediate rims are used. Wheel hub is cast iron, riveted to the back plate. All wheels are statically and dynamically balanced.

**Bearings** are babbitted-sleeve type as used on HV Fans. Ball bearings can be furnished where required.

**Double Width Fans** (each with two wheels) are built in 21 sizes.

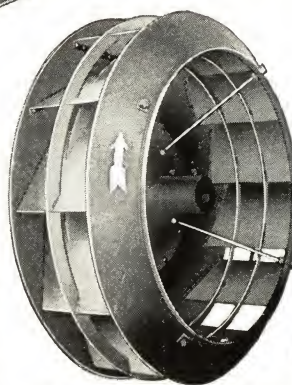
For more detailed information, see Clarage Bulletin 112.



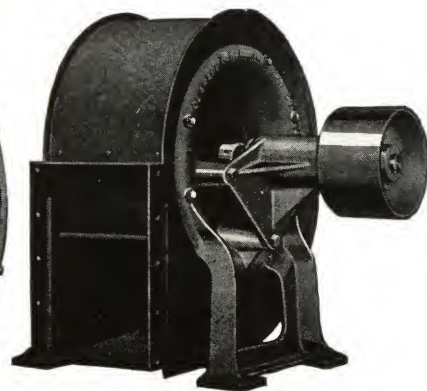
Multiblade wheel used in Type HV Fans.

## REVERSIBLE

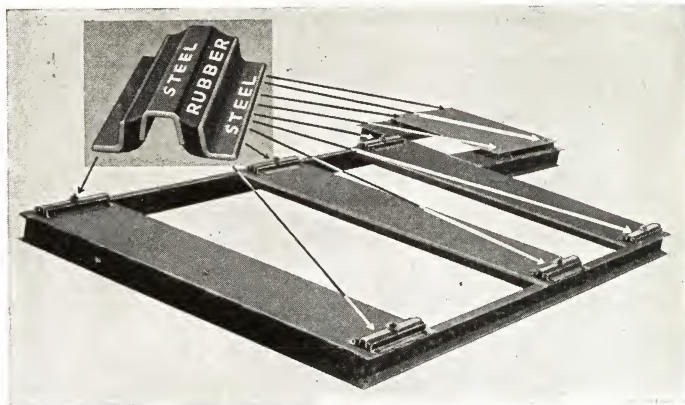
Both Type HV and W Fans, sizes No. 3 and smaller, are built with cast iron side plates as shown at extreme right. The side plates (one on either side) are secured to the fan housing by means of eight tap bolts spaced equidistant. Thus any one of these smaller fans are reversible for any of eight different directions of air discharge. Merely remove tap bolts, turn housing to new desired position and replace tap bolts. Fan wheel and bearings are not disturbed.



Backwardly inclined blade wheel used in Type W Fans.



Cast iron side plate construction used in small HV and W Fans.



## NOISE ISOLATING BASES

The Clarage Noise Isolating Base is an effective and inexpensive method of eliminating transfer of noise and vibration. Where this base is used, fan and its driving motor are totally isolated from the building. The result is a very quiet installation.

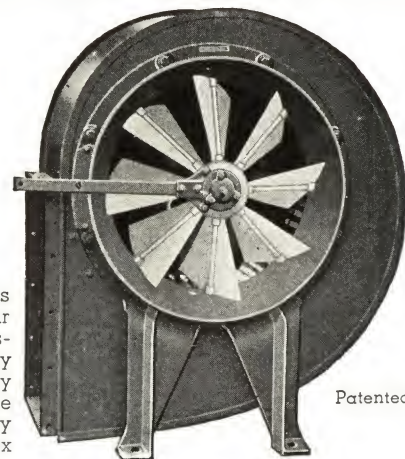
The structural steel base is built as shown, to extend completely under fan and motor. Both fan and motor are bolted to the isolators in such a manner that there are no metal to metal contacts. Rubber insulation is a high tensile, long life compound securely bonded to the metal angles with an adhesion of over 250 pounds per sq. in. Rubber is in "shear" which is better practice than compression, as it permits the rubber to retain its elasticity for long periods.

Noise Isolating Bases are made to order and can be furnished for any Clarage Fan.

## CLARAGE VORTEX CONTROL Regulates Fan Capacity at Constant Speed Operation

Wherever it is essential in an air conditioning system to periodically or continually change the volume of air delivered by the fan, Vortex Control should be used because of money-saving possibilities. It has the low first cost of damper control, and efficient performance of variable speed control.

This device is built into the fan inlet as shown, and operates as part of the fan. It does not add extra resistance, but actually reduces volume of air handled by reducing relative speed of the fan wheel with relation to the air entering the fan. By moving the blades of the control, a fan operating at constant speed is given the characteristic of a fan operating at variable speed. Device is simple and trouble-free. It may be regulated manually or automatically. All Type HV and W Fans can be equipped. For detailed information, see Clarage Bulletin 101.



Patented



## ABBREVIATED PERFORMANCE—TYPE HV FANS, SINGLE WIDTH, SINGLE INLET

Fan Size No.		1	1¼	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	4	4½	5
Wheel Dia.		13"	16¼"	19½"	22¾"	26"	29¼"	32½"	35¾"	39"	42½"	45½"	52"	58½"	65"
¼" S.P. 1200 O.V. .090 V.P.	CFM RPM HP	1035 509 .12	1613 407 .18	2322 327 .22	3156 281 .29	4128 245 .38	5220 217 .48	6444 197 .59	7782 178 .75	9288 164 .85	10890 146 1.04	12660 136 1.22	16524 120 1.59	20880 106 2.00	25800 96 2.47
½" S.P. 1300 O.V. .106 V.P.	CFM RPM HP	1122 637 .19	1748 510 .29	2516 412 .36	3419 353 .49	4472 308 .64	5655 273 .81	6981 247 1.00	8430 224 1.20	10062 206 1.44	11798 188 1.64	13715 174 1.90	17910 152 2.48	22620 135 3.13	27950 122 3.87
¾" S.P. 1400 O.V. .123 V.P.	CFM RPM HP	1208 748 .28	1882 598 .44	2709 490 .54	3682 420 .73	4816 367 .95	6090 325 1.20	7518 294 1.48	9078 264 1.76	10836 245 2.13	12705 222 2.45	14770 206 2.85	19278 180 3.72	24360 160 4.70	30100 144 5.80
1" S.P. 1500 O.V. .140 V.P.	CFM RPM HP	1294 851 .39	2016 680 .61	2903 557 .72	3945 478 .98	5160 417 1.28	6525 369 1.61	8055 335 1.99	9727 302 2.38	11610 279 2.87	13613 252 3.28	15825 233 3.80	20655 204 4.97	26100 181 6.26	32250 163 7.75
1¼" S.P. 1600 O.V. .160 V.P.	CFM RPM HP	1380 944 .52	2150 754 .80	3096 618 .93	4208 530 1.26	5504 463 1.66	6960 410 2.09	8592 371 2.58	10375 336 3.13	12384 309 3.72	14520 280 4.33	16880 261 5.02	22032 228 6.55	27840 203 8.27	34400 182 10.2
1½" S.P. 1800 O.V. .160 V.P.	CFM RPM HP	1552 1039 .70	2420 830 1.09	3482 683 1.30	4734 585 1.77	6192 512 2.31	7830 453 2.92	9666 410 3.61	11672 369 4.25	13932 341 5.20	16335 308 5.82	18990 286 6.77	24786 250 8.82	31320 222 11.1	38700 200 13.8

NOTE: For performance of double width, double inlet HV Fans (available in sizes No. 1½ and larger) multiply CFM x 2, RPM x 1.015, BHP x 2.1 and OV x 1.11.

## ABBREVIATED PERFORMANCE—TYPE W FANS, SINGLE WIDTH, SINGLE INLET

Fan Size No.		1¼	1¾	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	3¾	4¼	4¾
Wheel Dia.		16¼"	17¾"	19½"	22¾"	26"	29¼"	32½"	35¾"	39"	42¼"	45½"	50¾"	55¼"	61¾"
¼" S.P. 1000 O.V. .062 V.P.	CFM RPM HP	1344 809 .11	1627 735 .13	1935 620 .14	2630 532 .19	3440 464 .25	4350 412 .32	5370 372 .39	6485 338 .48	7740 310 .57	9075 286 .66	10550 266 .77	12900 240 .94	15519 218 1.13	19390 196 1.41
½" S.P. 1200 O.V. .090 V.P.	CFM RPM HP	1613 1035 .24	1952 940 .29	2322 792 .29	3156 680 .40	4128 594 .52	5220 528 .66	6444 476 .81	7782 432 .98	9288 396 1.17	10890 366 1.37	12660 340 1.59	15480 308 1.94	18623 280 2.34	23268 250 2.92
¾" S.P. 1300 O.V. .106 V.P.	CFM RPM HP	1747 1188 .37	2115 1079 .45	2516 908 .43	3419 778 .59	4472 680 .77	5655 604 .98	6981 544 1.20	8430 494 1.46	10062 454 1.73	11798 418 2.04	13715 389 2.36	16770 351 2.89	20175 320 3.48	25207 286 4.35
1" S.P. 1400 O.V. .123 V.P.	CFM RPM HP	1882 1325 .51	2278 1203 .62	2709 1012 .60	3682 868 .83	4816 760 1.08	6090 676 1.36	7518 608 1.68	9079 552 2.04	10836 506 2.41	12705 468 2.84	14770 434 3.30	18060 392 4.02	21727 358 4.85	27146 320 6.05
1¼" S.P. 1500 O.V. .140 V.P.	CFM RPM HP	2016 1449 .68	2441 1317 .82	2903 1108 .80	3945 948 1.09	5160 830 1.42	6525 736 1.79	8055 664 2.21	9727 604 2.68	11610 554 3.19	13613 511 3.75	15825 474 4.35	19350 428 5.32	23279 390 6.40	29085 349 8.00
1½" S.P. 1600 O.V. .160 V.P.	CFM RPM HP	2150 1567 .86	2603 1423 1.04	3096 1204 1.01	4208 1032 1.37	5504 902 1.80	6960 800 2.25	8592 722 2.81	10376 656 3.41	12384 602 4.03	14520 555 4.76	16880 516 5.48	20640 465 6.75	24830 424 8.13	31024 380 10.15

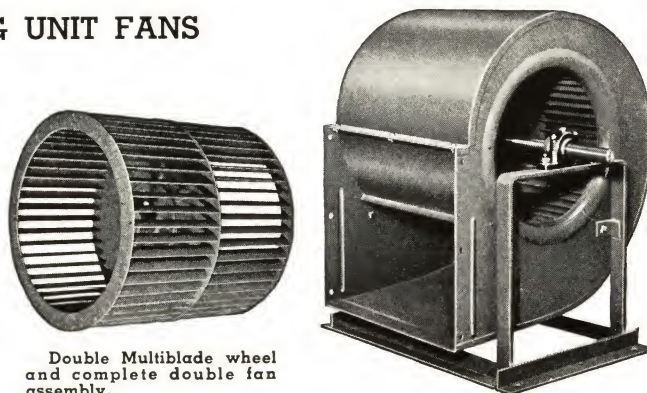
NOTE: For performance of double width, double inlet type W Fans (available in sizes No. 1¾ and larger) multiply CFM x 2, RPM x 1.02, BHP x 2.08 and OV x 1.11.

## FURNACE AND CONDITIONING UNIT FANS

These small Clarage Fans are of the centrifugal type, for use in connection with warm air furnaces as booster fans or as a part of residential air conditioning systems. They offer high efficiency at low speed, trouble-free performance, and are **extremely quiet in operation**—built in ten sizes with capacities of 200 to 5000 CFM. They can be furnished for short center V-belt drive or for direct connection to motors.

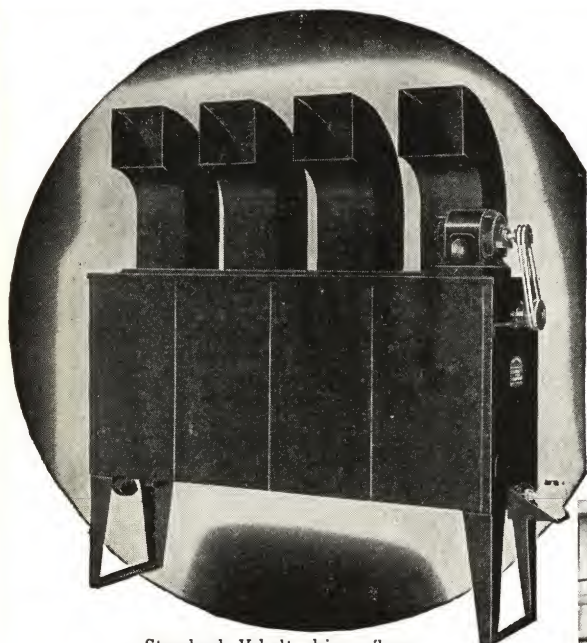
Units can be furnished as complete fans, with or without inlet boxes. Duplex units consisting of two fans with a common shaft are available. Also manufacturers of air conditioning units can be supplied with wheels, housings or such other fan parts as they may require in the manufacture of their units.

For capacities and detailed information, see Clarage Bulletin 33.



Double Multiblade wheel and complete double fan assembly.





Standard V-belt drive, floor mounted Unittherm Unit Heater.

—no upper areas too hot—no cold floors. Comfortable conditions are assured at minimum fuel cost. Steam or hot water can be used as heating medium.

**Fans:** One multiblade fan is furnished for each unit heater outlet, and is individually housed. All fans are both statically and dynamically balanced—**quiet in operation**. They are mounted on a common shaft, oversize in diameter to insure trouble-free operation. Two ball bearings, mounted outside of casing for easy access, support rotating assembly.

**Drive:** Units are furnished for either V-belt drive or direct connection. V-belt drive units are standard and offer a certain degree of flexibility as to fan speed. Motor is a standard ball-bearing type.

**Heating Coil** is good for working pressures up to 200 pounds. Tubes and fins are light-weight and non-corrosive. This coil incorporates the modern bent-tube-safety construction which prevents any possibility of breakage due to expansion. It is tested to 1000 pounds hydraulic pressure.

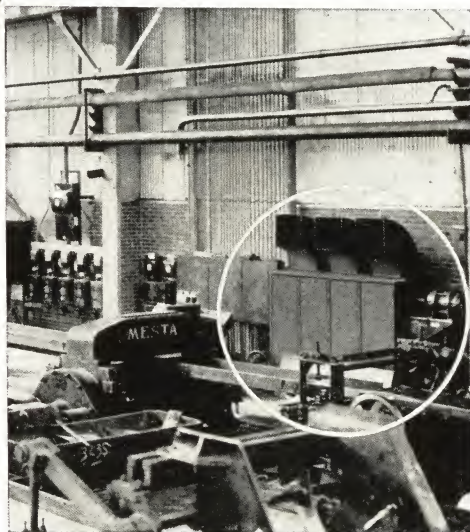
**Outlets** are square. They not only enable Unittherm Units to heat wide areas effectively, but are easily adjustable for four different directions of discharge.

**Heater Casing** is fabricated by using 3/16" steel plate ends and a heavy angle iron frame to which front and back sheets are attached.

**Finish:** Exterior of units are enameled an attractive dark green.

**All Parts Accessible:** By merely loosening and withdrawing machine screws, entire front or back section of heater casing can be removed. Thus fan assembly and heating coil are removable through front or back of unit. This feature permits units to be installed in close quarters, since no space need be left at one end for withdrawing coil.

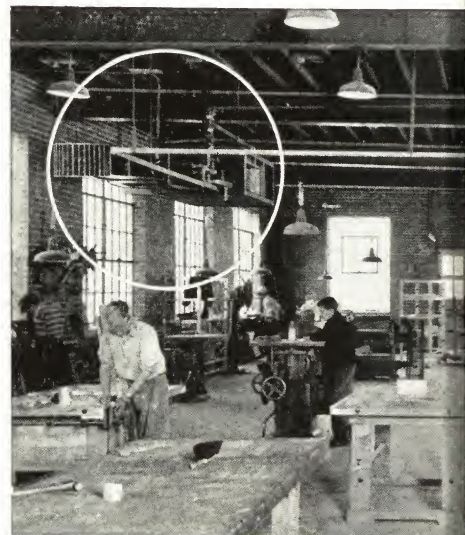
For further information, see Clarage Bulletin 103.



Above: Direct connected, floor mounted Unittherm Unit Heater operating in steel mill.

At right: Horizontal suspended Unittherm Unit Heater installed in manual training department of city school.

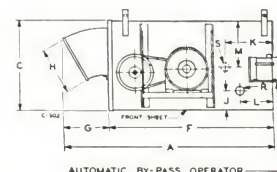
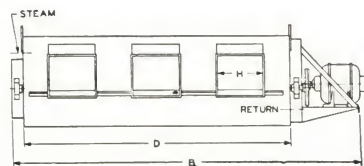
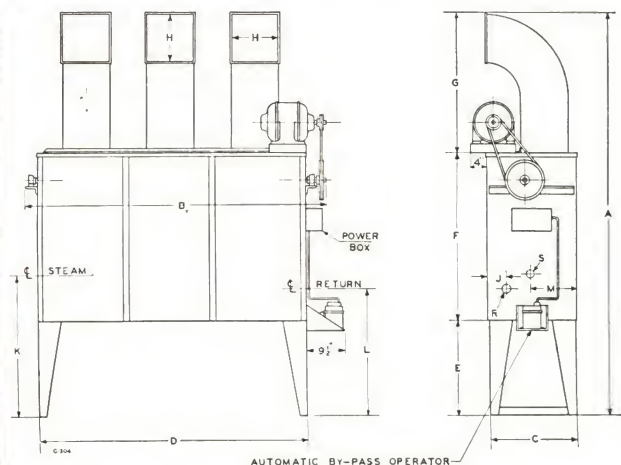
Unittherm Units provide a heating system extremely flexible, and one which responds immediately to demands for more or less heat—where you want it, and when you want it.



## FOR HEATING FACTORIES, WAREHOUSES, GARAGES, AUDITORIUMS, ARMORIES, GYMNASIUMS, ETC.

Unittherm Unit Heaters are built for floor or suspended installation as indicated below, and in 28 sizes as shown on the next page. Equipped with positive centrifugal fans, they deliver heated air at high velocity and this heat is uniformly diffused over wide areas.

When furnished with Syncrotherm Control (see bottom of next page), capacity of unit is automatically adjusted to requirements of the space. This, combined with the fact that the fans give continuous circulation, reduces to minimum the difference between floor and ceiling temperatures in the space heated. There is no air stratification



### FLOOR MOUNTED UNITS

SIZE	A	B* MAX.	Bv	C	D	E	F	G	H	STEAM	RETURN
A-18	100 1/4	55	36 1/8	22 1/4	28	24	42 1/4	34 1/4	12 1/4	2	2
B-18	100 1/4	75	56 1/8	22 1/4	48	24	42 1/4	34 1/4	12 1/4	2	2
C-18	100 1/4	95	76 1/8	22 1/4	68	24	42 1/4	34 1/4	12 1/4	2	2
D-18	100 1/4	115	96 1/8	22 1/4	88	24	42 1/4	34 1/4	12 1/4	2	2
B-24	106 1/4	86	63 1/8	25 1/4	53	24	48 1/4	34 1/4	14 1/4	2	2
C-24	106 1/4	106	83 1/8	25 1/4	73	24	48 1/4	34 1/4	14 1/4	3	2
D-24	106 1/4	126	103 1/8	25 1/4	93	24	48 1/4	34 1/4	14 1/4	3	2
C-30	106 1/4	120 1/2	98 1/8	32 1/4	88	15	57 1/4	34 1/4	18 1/4	3	2
C-36	114 1/4	120 1/2	98 1/8	37 1/4	88	20	60 1/4	34 1/4	20 1/4	2	2

\*Dimension "B" gives overall width of Direct Connected Units.

### HORIZONTAL SUSPENDED UNITS

SIZE	A	B* MAX.	Bv	C	D	F	G	H	STEAM	RETURN
A-18	54 7/8	55	52	23 1/4	28 3/4	42 1/4	12 3/4	12 1/4	2	2
B-18	54 7/8	75	72	23 1/4	48 3/4	42 1/4	12 3/4	12 1/4	2	2
C-18	54 7/8	95	92	23 1/4	68 3/4	42 1/4	12 3/4	12 1/4	2	2
D-18	54 7/8	115	112	23 1/4	88 3/4	42 1/4	12 3/4	12 1/4	2	2
B-24	62 5/8	86	83	26 1/4	53 3/4	48 1/4	14 1/4	14 1/4	2	2
C-24	62 5/8	106	103	26 1/4	73 3/4	48 1/4	14 1/4	14 1/4	3	2
D-24	62 5/8	126	123	26 1/4	93 3/4	48 1/4	14 1/4	14 1/4	3	2
C-30	75 5/8	120 1/2	117 1/2	33 1/4	88 3/4	57 1/4	18 1/4	18 1/4	3	2
C-36	80 7/8	120 1/2	117 1/2	38 1/4	88 3/4	60 1/4	20 1/4	20 1/4	2	2

\*Dimension "B" gives overall width of Direct Connected Units.



## CAPACITY RATINGS—UNITHERM UNIT HEATERS

Unit Size	V-BELT DRIVE					DIRECT CONNECTED				
	Motor HP	Fan RPM	CFM @ F.T.	BTU 2-lb. Steam 60° E.A.	F.T. °F.	Motor HP	Fan RPM	CFM @ F.T.	BTU 2-lb. Steam 60° E.A.	F.T. °F.
A-18-1	1/4	740	1265	71,375	116	1/4	870	1500	79,500	113
A-18-2	1/4	740	1265	80,000	124	1/4	870	1500	89,000	120
A-18-2 1/2	1/4	740	1190	89,720	138	1/4	870	1400	100,250	134
B-18-1	1/3	740	2530	142,750	116	1/2	870	3000	159,000	113
B-18-2	1/3	740	2530	160,000	124	1/2	870	3000	178,000	120
B-18-2 1/2	1/3	740	2380	179,500	138	1/2	870	2800	200,500	134
C-18-1	1/2	740	3795	214,126	116	3/4	870	4500	238,500	113
C-18-2	1/2	740	3795	240,000	124	3/4	870	4500	267,000	120
C-18-2 1/2	1/2	740	3570	269,000	138	3/4	870	4200	300,750	134
D-18-1	3/4	740	5060	285,550	116	1	870	6000	318,000	113
D-18-2	3/4	740	5060	320,000	124	1	870	6000	356,000	120
D-18-2 1/2	3/4	740	4760	359,000	138	1	870	5600	401,000	134
B-24-1	1/2	660	3680	207,000	116	1	870	4850	250,000	111
B-24-2	1/2	660	3680	221,250	121	1	870	4850	267,000	115
B-24-2 1/2	1/2	660	3430	247,500	135	1	870	4520	297,500	127
C-24-1	3/4	660	5520	311,000	116	1 1/2	870	7275	375,000	111
C-24-2	3/4	660	5520	331,875	121	1 1/2	870	7275	400,000	115
C-24-2 1/2	3/4	660	5145	371,250	135	1 1/2	870	6775	446,000	127
D-24-1	1	660	7360	415,000	116	2	870	9700	500,000	111
D-24-2	1	660	7360	442,500	121	2	870	9700	534,000	115
D-24-2 1/2	1	660	6860	495,000	135	2	870	9040	595,000	127
C-30-1	1 1/2	537	9990	505,000	110	1 1/2	870	9300	484,000	112
C-30-2	1 1/2	537	9990	555,000	116	1 1/2	870	9300	530,000	118
C-30-2 1/2	1 1/2	537	9340	580,000	123	1 1/2	870	9000	565,500	124
C-30-2 3/4	1 1/2	537	9340	620,000	128	1 1/2	870	9000	604,000	129
C-36-1	3	583	14630	725,000	109	Not available for Direct Connection				
C-36-2	3	583	14630	818,000	116					
C-36-2 1/2	3	583	13850	926,000	128					

## RATINGS—CLARCO HEATERS

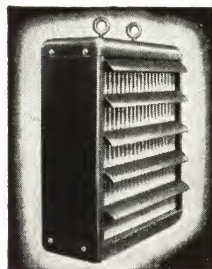
Unit Size	Motor HP	Fan RPM	CFM (70° Vol.)	BTU 2-lb. Steam 60° E.A.	F.T. °F.
18	1/100	1550	195	18,000	145
30	1/40	1550	468	30,500	120
36	1/40	1590	547	36,200	121
44	1/20	1155	781	43,200	111
49	1/20	1155	754	49,000	120
58	1/20	1140	754	58,000	131
66	1/10	1150	1062	65,800	117
75	1/10	1130	1279	75,000	114
84	1/10	1130	1438	84,300	114
95	1/10	1140	1203	95,500	133
105	1/10	1140	1327	105,000	133
115	1/8	1125	1537	115,000	129
130	1/8	1125	1738	130,000	129
155	1/6	1120	2075	155,250	129
170	1/6	1120	2275	170,100	129
190	1/4	1125	2695	190,000	125
215	1/4	1125	3055	215,500	125
245	1/2	1110	3640	245,000	122
280	1/2	1110	4160	280,000	122
370*	1/4	1125	5410	370,100	123
480*	1/2	1110	6600	480,000	127

\*Equipped with two motors.

NOTES (applying to both tables): "E. A." is abbreviation for entering air. "F. T." is abbreviation for final temperature. To determine equivalent direct radiation of any unit in either table, divide BTU capacity as given by 240.

## CLARCO UNIT HEATERS

### for Smaller Heating Jobs



Clarco Unit Heaters are of the propeller fan type built in 21 sizes for steam heating (see table above). Units specially designed for hot water applications are also available.

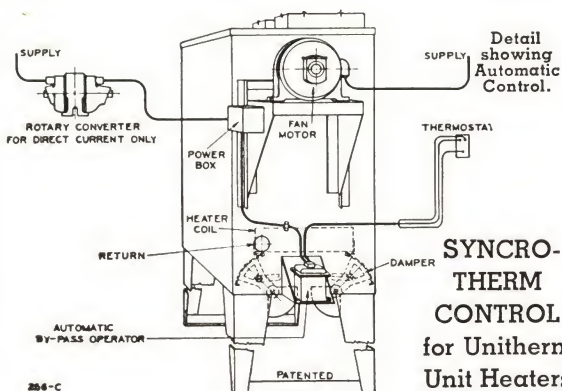
**Services:** In industrial buildings, Clarco Units are recommended for heating small areas with relatively low ceilings, multi-story buildings where heat losses are concentrated around outside walls, and for eliminating condensation in process work; for heating garages, etc. They can also be successfully used where quiet operation is required, such as in stores, auditoriums, offices, etc.

**Fans** are of aluminum alloy, accurately balanced, and with blades pitched to obtain maximum volume delivery with minimum noise and power.

**Motors** are totally enclosed and rubber mounted (available in either constant or multi-speed types).

**Heating Coil** has copper fins metallicity bonded to red brass tubes which are brazed into copper headers, eliminating electrolysis troubles. Standard construction for steam units incorporates an expansion bend in each tube, eliminating strains due to unequal expansion. Coils are guaranteed for pressures up to 150 pounds (except for size 18).

For complete information, see Clarage Bulletin 104.

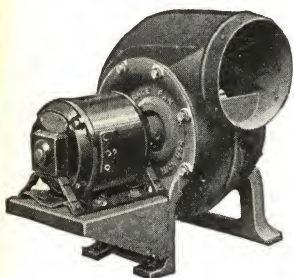


This device consists of two sector-type bypass dampers located on either side of coil as shown above. The position of dampers, which determines amount of air bypassed around heating coil and consequently the heat output of unit, is controlled by a damper motor mounted on the Unitherm Unit, and actuated by a thermostat in the heated space. Fans operate continuously during heating period, and heat output of unit is adjusted automatically to requirements.

Synchrotherm Control is especially desirable where units take in outside air for ventilating purposes, since a constant volume of outside air can be supplied at all times with final temperature of unit so controlled as to prevent overheating in mild weather. Synchrotherm bypass dampers can be manually operated, but to obtain maximum benefits automatic control should be used.



for VENTILATING TOILETS, BANK VAULTS, TELEPHONE BOOTHS, SMALL OFFICES, STATE-ROOMS, ETC.—REMOVING FUMES FROM KITCHENS AND CHEMICAL LABORATORIES

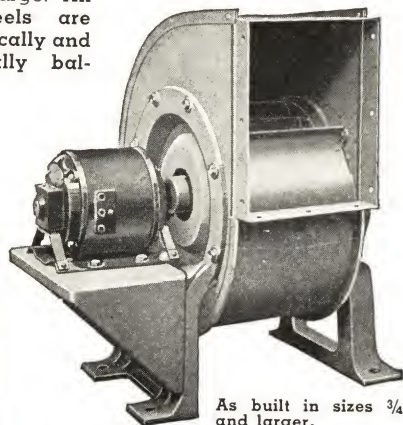


As built in sizes No. 1/2 and 3/8.

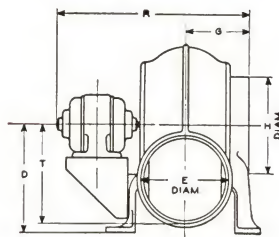
This line of standard Ready Units is the most complete on the market. It permits the choice of fan for any application without sacrificing high efficiency or quietness of operation. Most units can be furnished from stock, and they are complete and ready to run.

The motor is usually mounted on a steel support as shown, and the fan wheel mounted on the motor shaft extension. Either alternating or direct current motors can be furnished. They are of a type which insures maximum quietness, and do not cause radio interference. All motors meet N.E.L.A. requirements, and are guaranteed to operate the fans at 0" resistance (SP) without overloading.

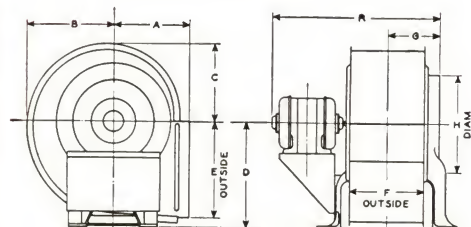
Clarage Ready Units are ideal for small ventilating jobs of all kinds, also for cooling and drying installations, or for forced draft in connection with small heating plants. In fact, they can be used wherever small volumes of air or other gases are to be handled at low pressures. As shown, sizes 1/2 and 3/8 are built with cast iron fan housings; larger sizes with steel housings. All sizes are reversible for direction of air discharge. All fan wheels are both statically and dynamically balanced.



As built in sizes 3/4 and larger.



Units Nos. 1/2 and 3/8.



All Units

Units 3/4 and larger.

Unit No.	H.P. Motor	Speed		CAPACITY IN CU. FT. PER MINUTE									
				RESISTANCE (SP) W. G.									
				1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"		
1/2	L.S.	1/20	850	cfm	212	41							
		1/8	1150	ov	1200	209							
		1/6	1725	cfm	360	315							
				ov	1800	1600	1300						
5/8	L.S.	1/20	850	cfm	515	450							
		1/8	1150	ov	1690	1480							
		1/6	1740	cfm	735	680							
				ov	2400	2200	2050	1825	1600				
3/4	L.S.	1/20	850	cfm	1133	1130							
		1/8	1150	ov	3550	3480	3400	3380	3340				
		1/6	1740	cfm	975	875							
				ov	2000	1800	1575	1318					
1	H.S.	1/20	850	cfm	1400	1300							
		1/8	1150	ov	2882	2675	2520	2337	2170	1990	1815	1616	
		1/6	1740	cfm	2180	2100	2060	1990	1940	1890	1835	1780	
				ov	4490	4325	4242	4100	4000	3892	3778	3660	
1 1/2	H.S.	1/20	850	cfm	550	365							
		1/8	1150	ov	830	552							
		1/6	1725	cfm	825	710							
				ov	1125	1072	870	605					
2	H.S.	1/20	850	cfm	1335	1270							
		1/8	1150	ov	2010	1920	1800	1690	1020	1590	940	840	730
		1/6	1740	cfm	1335	1270	1190	1110	1020	940	840	730	1105
				ov	2010	1920	1800	1690	1020	1590	940	840	730
3	H.S.	1/20	850	cfm	875	685							
		1/8	1150	ov	1015	793							
		1/6	1740	cfm	1275	1145							
				ov	1475	1327	1158	967	753	504			
1 1/2	H.S.	1/20	850	cfm	2010	1940							
		1/8	1150	ov	2315	2223	2153	2031	1958	1850	1740	1612	
		1/6	1740	cfm	2010	1940	1860	1780	1690	1600	1500	1390	
				ov	2315	2223	2153	2031	1958	1850	1740	1612	
2 1/2	H.S.	1/20	850	cfm	1310	1110							
		1/8	1150	ov	1593	1005							
		1/6	1740	cfm	1860	1720							
				ov	1694	1570	1440	1276	1094	912	710	483	
3 1/2	H.S.	1/20	850	cfm	2930	2850							
		1/8	1150	ov	2670	2600	2517	2430	2350	2255	2160	2050	
		1/6	1740	cfm	2930	2850	2760	2665	2580	2475	2365	2245	
				ov	2670	2600	2517	2430	2350	2255	2160	2050	
4 1/2	L.S.	1/20	850	cfm	2120	2170							
		1/8	1150	ov	2200	1980							
		1/6	1740	cfm	2980	2800							
				ov	2720	2550	2350	2170	1980	1750	1320		
5 1/2	L.S.	1/20	850	cfm	3830	3710							
		1/8	1150	ov	3490	3390							
		1/6	1740	cfm	5230	5130							
				ov	4770	4680	4560	4480	4360	4250	4150	4020	
6 1/2	M.S.	1/20	850	cfm	1595	1470							
		1/8	1150	ov	1186	1095							
		1/6	1740	cfm	2175	2130							
				ov	1615	1585	1525	1445	1355	1255	1150	1040	
7 1/2	M.S.	1/20	850	cfm	3305	3290							
		1/8	1150	ov	2460	2445	2440	2410	2377	2330	2270	2217	
		1/6	1740	cfm	3305	3290	3280	3240	3195	3130	3055	2980	
				ov	2460	2445	2440	2410	2377	2330	2270	2217	
8 1/2	M.S.	1/20	850	cfm	1675	1470							
		1/8	1150	ov	1030	905							
		1/6	1740	cfm	2145	2000							
				ov	1320	1230	1130	1020	896	762			
9 1/2	M.S.	1/20	850	cfm	2910	2870							
		1/8	1150	ov	1790	1765	1720	1655	1580	1490	1395	1305	
		1/6	1740	cfm	2910	2870	2766	2700	2580	2380	2230	2080	
				ov	1790	1765	1720	1655	1580	1490	1395	1305	
10 1/2	M.S.	1/20	850	cfm	1880	1660							
		1/8	1150	ov	972	860							
		1/6	1740	cfm	2340	2220							
				ov	1210	1145	1050	900					
11 1/2	M.S.	1/20	850	cfm	2950	2875							
		1/8	1150	ov	1525	1485							
		1/6	1740	cfm	4050	3965							
				ov	2095	2050	2015	1990	1950	1890	1840	1770	
12 1/2	M.S.	1/20	850	cfm	3030	2840							
		1/8	1150	ov	1150	1080							
		1/6	1740	cfm	3740	3630							
				ov	1425	1380	1315	1225	1115	980			
13 1/2	M.S.	1/20	850	cfm	4725	4625							
		1/8	1150	ov	1795	1760							
		1/6	1740	cfm	4725	4625	4520	4400	4260	4075	3850	3590	
				ov	1795	1760	1720	1670	1620	1550	1465	1365	
14 1/2	L.S.	1/20	850	cfm	4000	3445							
		1/8	1150	ov	1520	1310							
		1/6	1740	cfm	5460	5110							
				ov	2080	1940	1810	1690	1530	1350			
15 1/2	L.S.	1/20	850	cfm	5970	5700							
		1/8	1150	ov	2270	2170							
		1/6	1740	cfm	7410	7060							
				ov	2820	2685	2600	2515	2420	2320	2220	2100	
16 1/2	L.S.	1/20	850	cfm	8980	8810							
		1/8	1150	ov	3410	3350							
		1/6	1740	cfm	8980	8810	8630	8450	8250	8060	7900	7660	
				ov	3410	3350	3280	3210	3140	3065	3000	2920	
17 1/2	M.S.	1/20	850	cfm	3740	3460							
		1/8	1150	ov	1088	1005							
		1/6	1740	cfm	4560	4400							
				ov	1325	1280	1200	1088	950	825			
18 1/2	M.S.	1/20	850	cfm	5650	5480							
		1/8	1150	ov	1640	1593							
		1/6	1740	cfm	7125	7000							
				ov	2070	2035	1990	1970	1930	1880	1830	1760	

Units not starred are very quiet in operation and have quiet operative sleeve bearing motors.

Units marked \* are moderately quiet and have quiet operating sleeve bearing motors.

Units marked \*\* are not quiet and should only be used for industrial application. Equipped with standard ball bearing motors.

## DIMENSIONS (applying to drawings at left)

Size	A	B	C	D	E	F	G	H	R
$\frac{1}{2}$ L.S.	$6\frac{1}{8}$	6	$5\frac{3}{8}$	$7\frac{1}{4}$	6	—	$4\frac{1}{4}$	$6\frac{1}{2}$	$17\frac{1}{2}$
$\frac{3}{8}$ L.S.	$7\frac{1}{4}$	$7\frac{1}{4}$	$6\frac{5}{8}$	$8\frac{3}{4}$	$7\frac{1}{2}$	—	$4\frac{7}{8}$	$8\frac{1}{2}$	$21\frac{1}{2}$
$\frac{3}{4}$ L.S.	$8\frac{1}{8}$	$8\frac{1}{8}$	$7\frac{7}{8}$	$10\frac{1}{2}$	$9\frac{3}{4}$	$7\frac{1}{2}$	$5\frac{1}{4}$	$9\frac{3}{4}$	$23\frac{1}{2}$
$\frac{1}{2}$ H.S.	$9\frac{1}{8}$	$10\frac{1}{4}$	$9\frac{1}{8}$	$12\frac{1}{4}$	$11\frac{3}{8}$	$8\frac{3}{4}$	$6\frac{1}{4}$	$11\frac{3}{8}$	$23\frac{3}{8}$
$\frac{1}{8}$ H.S.	$10\frac{3}{8}$	$11\frac{1}{16}$	$10\frac{3}{8}$	14	13	10	7	13	$27\frac{1}{4}$
$\frac{1}{16}$ H.S.	$11\frac{3}{8}$	$12\frac{1}{16}$	$11\frac{1}{16}$	$15\frac{3}{4}$	$14\frac{5}{8}$	$11\frac{1}{4}$	$7\frac{5}{8}$	$14\frac{7}{8}$	$28\frac{3}{4}$
$\frac{1}{8}$ L.S.	$11\frac{3}{8}$	$12\frac{1}{16}$	$11\frac{1}{16}$	$15\frac{3}{4}$	$14\frac{5}{8}$	$11\frac{3}{4}$	$7\frac{5}{8}$	$14\frac{7}{8}$	$36\frac{3}{8}$
$\frac{1}{16}$ L.S.	$12\frac{3}{8}$	$14\frac{1}{16}$	$12\frac{1}{16}$	$17\frac{1}{2}$	$16\frac{1}{8}$	$12\frac{3}{8}$	$8\frac{11}{16}$	$16\frac{1}{2}$	$33\frac{1}{8}$
$\frac{1}{8}$ M.S.	$13\frac{1}{4}$	$15\frac{3}{8}$	$13\frac{7}{8}$	19	$17\frac{5}{8}$	$13\frac{3}{8}$	$9\frac{1}{16}$	18	$31\frac{1}{2}$
$\frac{1}{16}$ M.S.	$14\frac{1}{4}$	$17\frac{1}{8}$	$15\frac{1}{16}$	$20\frac{1}{2}$	$19\frac{1}{4}$	$14\frac{7}{8}$	$9\frac{1}{16}$	$20\frac{1}{4}$	$32\frac{1}{2}$
$\frac{1}{8}$ M.S.	$16\frac{1}{4}$	$19\frac{1}{8}$	$17\frac{1}{16}$	$23\frac{1}{2}$	$22\frac{1}{2}$	$17\frac{1}{4}$	$11\frac{3}{8}$	$23\frac{3}{4}$	$36\frac{3}{8}$
$\frac{1}{16}$ M.S.	$16\frac{1}{4}$	$19\frac{1}{8}$	$17\frac{1}{16}$	$23\frac{1}{2}$	$22\frac{1}{2}$	$17\frac{1}{4}$	$11\frac{3}{8}$	$23\frac{3}{4}$	$47\frac{1}{2}$
2 M.S.	$18\frac{1}{4}$	$22\frac{3}{8}$	$19\frac{1}{16}$	$26\frac{3}{4}$	$25\frac{3}{8}$	$19\frac{3}{4}$	$12\frac{9}{16}$	27	$38\frac{1}{2}$



# Quarter Century of Experience...

Clarage Air Handling and Conditioning Equipment is produced by an organization that has been a leader in the fan industry for over a quarter century. Thousands of installations have been made. Clarage Fans, Air Washers and Conditioning Units are operating in the largest and finest hotels, theatres, schools, hospitals, office buildings and industrial plants — having first gained the acceptance of America's leading architects and engineers.

The Clarage Fan Company is an active member of both the National Association of Fan Manufacturers and Industrial Unit Heater Association. All development tests made on Clarage Fans and Conditioning Equipment are made in conformance with the Standard Test Code adopted by the National Association of Fan Manufacturers and American Society of Heating & Ventilating Engineers.

This Company has taken every possible precaution to insure accuracy of ratings. Therefore, when you specify Clarage, you can be certain that the equipment will perform as you expected, eliminating the possibility of trouble due to overloaded motors or a failure to produce the desired results.

In addition to the **Static and Dynamic Balance Tests** given all Clarage fan wheels, every Clarage unit, when completely assembled, is given a thorough operating test prior to shipment. In fact nothing is overlooked to make Clarage Equipment, when it goes out on the job, as nearly perfect as sound engineering, first-class materials and expert workmanship can make it.

**Bypass Units:** As evidenced by the emblem below, the Clarage Company is licensed by the Auditorium Conditioning Corp. to manufacture and sell, or to give written permission to others to install, conditioning units or equipment embodying the inventions covered by any or all of the patents of the Auditorium Conditioning Corp. Write for detailed information.

**COMPLETE LINE OF EQUIPMENT** . . . .  
Aside from products described in this condensed Bulletin, Clarage builds many other types of equipment in which you may be interested. Any of the Bulletins shown on this page will be sent gladly upon request.



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# CLARAGE

**a Nation-Wide Service**



**. . . Air Handling and  
Air Conditioning Equipment . . .**



In each of the cities listed on the map above, there is a Clarage sales-engineering office. And our representatives are trained men, competent of cooperating with architects and engineers on any type of air handling or air conditioning problem. Dial our telephone number in your city, or write the factory for any information desired.

In Canada: Canada Fans Ltd., 4107 Richelieu St., Montreal, Quebec  
Export Office: 50 Church St., New York City